

sponsible for the great bulk of the plaice landed at Ostend at the present day. Now it is clearly shown that this increase in the proportion of small fish is not due to a change in the field of action of the boats concerned, for the displacement which has actually occurred has been of such a nature that it ought to have produced a *contrary* effect. It is in consequence of a modification of the composition of the reserves of plaice inhabiting the Southern Bight of the North Sea. The curves for the various divisions of the Southern North Sea show this very clearly. The proportion of small fish in the annual catches in *each* of these divisions shows a gradual rise from 1904 to 1908. That the change in the composition of the plaice population on these fishing grounds consists in a diminution in the number of large individuals and *not* in an increase in the number of small is also fairly clear.

This is the important point: the supply of plaice in the Belgian market is apparently being maintained at the sacrifice of an increasing proportion of the smaller and much less valuable sizes. Researches on similar lines which have been made by the other four nations most interested have apparently much the same tale to tell; but, as these have not been co-ordinated and compared, it would be premature to make any general statement about the condition of the plaice fishery in the North Sea as a whole.

As a remedy for the state of things revealed in the Belgian statistics, Prof. Gilson suggests the *tentative* imposition of a minimum size of 23 centimetres, below which it should be illegal on the part of the sailing trawlers to land or sell fish, and a similar standard of 25 centimetres for steam trawlers. The reasons for the selection of these particular size limits and for a distinction between the two classes of vessels in this respect are fully discussed in the report and hardly need be recapitulated. Very similar size limits for plaice have been suggested by certain of Prof. Gilson's colleagues on the International Council, who will probably be found unanimous in agreeing with him that all such measures designed for the protection of undersized plaice should be of an experimental and elastic nature. In view of the still very incomplete state of our knowledge of the plaice problem, which is far more complex than was at first supposed, certainly no State would be justified in making such legislation final or irrevocable. It would be impossible to predict the effect of the imposition of a given size limit, or the amount of inconvenience attending its enforcement. It is inevitably a case of "try and see." Moreover, a size limit is not the *only* possible means of bettering the plaice fishery. Transplantation to the Dogger Bank, and other grounds richer in food, has been tried on an experimental scale with striking results, in view of which it is worth considering as a possible commercial enterprise.

Finally, one cannot but agree with Prof. Gilson that if we are ever to have experimental legislation for plaice, then it is clear that the scientific control of its effects is indispensable. In other words, there ought to be a permanent International Commission to continue researches on points not yet elucidated, to study the statistics from year to year, and to carry out biological investigations designed to show the changes in the composition of the plaice population on the fishing grounds and in the rate of growth of the fishes which might be expected to result from the legislation. As Prof. Gilson truly says:—"C'est à ce prix seulement que l'on peut espérer de réparer le mal accompli et de porter remède à la rupture encore récente de l'équilibre qui

s'était établi, au cours des siècles, entre la puissance alimentaire des mers, le pouvoir reproducteur des espèces et les causes de destruction aux quelles celles-ci étaient soumises avant l'intervention de l'homme."

WILLIAM WALLACE.

#### NOTES.

MR. A. E. SHIPLEY, F.R.S., has been elected a foreign corresponding member of the Helminthological Society of Washington.

WE regret to announce the death, on April 15, at seventy-nine years of age, of Prof. J. Bosscha, correspondent of the physics section of the Paris Academy of Sciences, and formerly permanent secretary of the Dutch Society of Sciences at Haarlem.

THE National Geographical Society of America is sending out in the summer an expedition for the further study of the glaciers of Alaska. It will be led by Prof. Ralph S. Tarr, of Cornell University, and Prof. Martin, of the University of Wisconsin.

AN expedition, under the charge of Prof. Homer R. Dill, taxidermist of the University of Iowa, has left San Francisco for Layson Island. This island, which is situated in the Pacific about midway between California and Japan, is only about three and a half square miles in area, but is estimated to support a bird population of about eight millions.

THE tenth International Congress of Geography will be held at Rome on October 15 and the six following days. Excursions in northern and central Italy, as well as southern Italy and Sicily, will be arranged, of which the details will be published later. The subscription for membership of the congress is 11., and all persons desirous of joining are requested to remit this sum at an early date to the treasurer of the committee, 102 Via del Plebescito, Rome.

THE Victoria League has in operation a scheme for sending newspapers and magazines, when done with, to addresses in distant parts of the Empire. Although more than 81,000 newspapers and magazines are being sent away annually there are still many applicants unprovided for, and in South Africa and Victoria, Australia, particularly, we are informed copies of NATURE would be gratefully received. Any reader willing to help the movement should apply to the hon. sec. of the Newspaper Scheme, 2 Millbank House, Wood Street, Westminster, S.W.

PROF. HANS MEYER will undertake in May his fourth journey in East Africa. Starting from Bukoba, on the west shore of Lake Victoria, he proposes to march to Lake Kiva and the Kirunga group of volcanoes, in order to study the relations of the volcanic phenomena to the tectonic structure of the western rift system at this point. From Kiva the expedition will travel by Lake Tanganyika and, if time permits, also to Lake Nyassa. Besides geological studies, the botany, zoology, and ethnology of the region traversed will also be investigated.

DR. Pöck, in the April number of *Petermann's Mitteilungen*, discusses the distribution of plague during recent years, and illustrates it by two maps. The first shows the location of areas where it is endemic, and also those over which it has recently spread, as well as the places where isolated cases have occurred in different years. The second map shows the probable area of origin of the recent outbreak in Manchuria, and the region which was affected.

The influence of modern facilities of communication on the spread of the disease is insisted upon as constituting a factor acting against and sometimes having greater effect than the resources of modern sanitary science in some regions.

At a meeting of the Research Department of the Royal Geographical Society on April 27, Mr. A. R. Hinks discussed recent progress in geodesy. Invar tapes and wires have revolutionised base measurement; gravity surveys have been carried out over large areas, while abnormalities of gravity in more restricted regions have been determined with remarkable accuracy by the torsion balance; arcs of meridian have recently been measured in Spitsbergen, Africa, and Peru. In view of so much activity in geodetic work, it is to be regretted that so little has been done of late years in the United Kingdom. The measurement of an arc of meridian and a detailed gravity survey were instanced as pieces of work which should be carried out in these islands, and discussion on these matters was invited.

A REUTER message from Sydney states that the schooner *Kainan Maru*, the ship of the Japanese Antarctic Expedition, arrived there on April 30, the object of the expedition having been abandoned. The vessel, which left New Zealand in February for the Antarctic continent, was obliged to turn back on account of the ice packs and icebergs which she encountered, and reached Coulman Island, off the coast of Victoria Land. The decision of the explorers to abandon the attempt to reach the Pole was also influenced by the fact that ten of the twelve Eskimo dogs which were to have been used to pull the sledges succumbed to the cold. After cruising in the vicinity of Coulman Island for four days, the *Kainan Maru* set out for Sydney. A Reuter message from Hamburg reports that preparations are complete for the departure of the German Antarctic Expedition on May 3 on board the 598-ton barque *Deutschland*. The vessel will go first to Bremerhaven, whence she will start for Buenos Aires on May 7.

WE regret to announce the death, on April 28, in his fifty-third year, of Dr. J. Tatham Thompson, the well-known ophthalmic surgeon of Cardiff. He had suffered for many months from a painful and incurable illness. Dr. Thompson was born at York, educated at Bootham School in that city, and received his medical training at the University of Edinburgh, where he had a distinguished career and graduated M.B., C.M., in the year 1885. For some time he acted as assistant to the late Dr. Argyll Robertson, of the Edinburgh Royal Infirmary, and afterwards he obtained the appointment of ophthalmic surgeon to the Edinburgh Western Dispensary. During his stay in Edinburgh, he was distinguished by his artistic abilities, and many of the drawings in Berry's "Diseases of the Eye" were from his clever pencil. Dr. Thompson, however, soon went to South Wales, where he obtained the appointment of ophthalmic surgeon to the Cardiff Infirmary, which he held for many years. During this time his pen was seldom idle. He found time to write upon many ophthalmic subjects, including the influence of school life upon eyesight, nystagmus among Welsh miners, and the removal of foreign bodies from the interior of the eye by the aid of the magnet. At the time of his death Dr. Thompson was one of the vice-presidents of the Ophthalmological Society of the United Kingdom.

THE death is announced of Dr. F. J. C. Terby, who worked long and assiduously to promote astronomical

science. In a private observatory, which he constructed at Louvain, he mounted a Grubb equatorial of 8 inches aperture, and employed it mainly and usefully in the study of the surface markings of the planets. Mars particularly interested him, and he made a careful discussion of the physical features of this planet, recorded from the time of Fontana. This is a very valuable contribution to observational history. It puts into the hands of astronomers an accurate and ready summary of a great amount of detailed information, acquired by industry and sifted with intelligence. His observations of Venus appear to have been accurate and systematic, supporting Schiaparelli's view of the coincidence of the period of rotation with that of revolution. As an amateur astronomer, comets naturally attracted his attention, and the record of his observations of the physical features of many will be found in the pages of the *Memoirs of the Royal Academy of Belgium* and in the *Bulletins*. Of late years his observations appear to have been less frequent, probably on account of ill-health, but for many years he worked zealously, and his memory should be treasured as of one who laboured to inspire others with enthusiasm, and to make the science of astronomy respected.

*The Times* records the death of Mr. Henry Scherren, at his residence in Cavendish Road, Harringay, on April 25. Mr. Scherren had been a Carthusian monk, but abandoned his orders in the year 1878, and subsequently resided in London, where he devoted himself to journalism, more especially in regard to its natural history side. One of his favourite subjects was the zoological gardens of Europe, on which he wrote many articles, the last appearing in *The Field* of April 29, after his death. He also wrote an interesting history of the Zoological Society of London, of which he was elected a fellow in 1889. Among his contributions to zoology may be mentioned an account of the early history of Grévy's zebra, and another of the giraffe presented to King George IV. Mr. Scherren was born at Weymouth in 1842, and educated at the Romanist College at Mill Hill. For a period of twenty years he was in the employ of Messrs. Cassell, during which he acted as sub-editor of their "Encyclopædic Dictionary." He also wrote for *The Leisure Hour* and other journals.

THREE letters have recently appeared in *The Times* (April 24, 25, 27) relating to a mysterious heraldic animal known as the "jall" or "eall," of which the effigy has been recognised in St. George's Chapel, Westminster, on a stall-plate supporting the arms of John Duke of Somerset, 1440. Later, the jall appeared among the Sovereign's cognizances. Although described as having horns, tusks, and a short fluffy tail, the jall has been identified with the goat, but the Rev. H. F. Westlake, custodian of Westminster Abbey, adopts the view that it was "the" antelope. In an old document quoted by Mr. G. C. Druce, the eall is stated to be as large as a horse, with a tail like that of an elephant, goat-like jaws, and horns capable of movement, its colour being black. Other accounts state, however, that it has jaws like a wild boar and cloven hoofs. It may be suggested, if the beast ever had corporeal existence, that the African wart-hog may have formed the original type, that animal having a black hide, cloven hoofs, an elephant-like tail, large tusks, and big face-warts which might perhaps be regarded as elastic horns.

MUCH interest attaches to the description, by Mr. O. Thomas at the meeting of the Zoological Society on April 25, of a new form of takin from the Tsin-lin range of southern Shen-si, Central China. The typical Mishmi

takin (*Budorcas taxicolor*) is a dark-coloured animal with a large tawny area—traversed by a black spinal stripe—on the back. In the Sze-chuen takin (*B. tibetanus*) nearly the whole of the upper parts, exclusive of the face and ears, which are black, have become either golden-yellow or whitish-grey, and this tendency to the development of yellow culminates in the new Tsin-lin takin, in which all the black has disappeared, so that the whole fur, which is very long, is a beautiful golden-yellow. Mr. Thomas has named this takin *Budorcas bedfordi*, in honour of the Duke of Bedford, who is defraying the cost of the expedition which resulted in its acquisition. Whether the three forms are regarded as distinct species or as colour phases of one species, they are of great interest as showing the evolution of a golden from a black and chocolate type of colouring. What renders this the more remarkable is the fact that a similar development occurs in the case of the snub-nosed monkeys (*Rhinopithecus*), in which the comparatively low Mekon species is slate-coloured, while the elevated Sze-chuen form is bright golden-yellow.

THE second Irish Road Congress, held in Dublin on April 19, 20, and 21, attracted a large attendance of members, most of whom were men actually engaged in the construction and maintenance of Irish roads. The work of the congress was divided into three sections, dealing respectively with the laws and procedure relating to road construction, statistics, &c.; road construction and maintenance; and modes of locomotion. Twenty-five papers were submitted, mainly of a practical nature; but the chief subject dealt with in the discussions was the treatment of Ireland by the newly constituted Road Board, the general opinion of the members finding expression in a unanimous resolution to the effect that, in allocating the funds at its disposal, the Board had not carried out the avowed intentions of the sponsors of the Development and Road Improvement Act in Parliament, viz. that the proceeds of the special taxes raised with this object would be distributed without reference to the sources from which the money was drawn. The address of the president, Mr. P. J. O'Neill, J.P., chairman, General Council of County Councils, was almost entirely confined to this aspect of the road question, and gave the key-note to the proceedings; but the discussions, in which Sir George Gibb, president of the Road Board, and Colonel Crompton, consulting engineer to that body, took part, also included subjects of practical importance, such as the testing of materials, direct labour as opposed to the contract system, and the effect of motor traffic on the roads.

At a meeting of the Royal Dublin Society held on April 25, the Boyle medal of the society was presented to Prof. John Joly, F.R.S. A report upon his work was read by Dr. J. M. Purser, and some of the subjects mentioned in it are here summarised. Prof. Joly's researches deal with physics, geology, mineralogy, botany, and biological theory. In 1886 Joly published the method of condensation in calorimetry, and investigated the specific heats of minerals. He also determined the specific heats of gases at constant volume. By the maldometer he determined the fusion points of minerals, and showed the use of the instrument in carrying out reactions of pyrochemistry. He determined the volume change of rocks and minerals on fusion. He also invented the incandescent electric furnace. Joly advanced a physical theory on the origin of the canals of Mars, accounting for the linear markings on the planet. In 1896, he invented a method of colour-photography to reproduce with accuracy the colours of nature on a transparent plate. In 1898 he showed how the sodium content of the ocean could be used as a measure of geological time.

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The theory of sedimentation has also been advanced by his researches on electrolytic precipitation. By many researches he has laid the sciences of petrology and mineralogy under obligations to him. We would specially notice his invention of a polariser whereby the value of birefringence as a means of identification is increased, and his application of the microscope to the determination of the quality of paving-sets and road-metal. In connection with radioactivity, he has advanced our knowledge of the properties of radio-active substances. His explanation of Pleochroic Haloes in rocks as due to radioactivity leads to conclusions as to the non-existence of alpha-radiation from common elements. By the determination of the thorium content of rocks, he has established a mean value for its distribution in the surface-materials of the earth.

THE council of the Institution of Civil Engineers has made the following awards for papers read and discussed during the session 1910-11:—Telford gold medals to Mr. W. J. Wilgus (New York) and Mr. J. Walker Smith (Edinburgh); a George Stephenson gold medal to Mr. Philip Dawson (London); Telford premiums to Messrs. G. W. Humphreys (London), H. K. G. Bamber (Greenhithe), A. E. Carey (London), William Dawson (Crewe), and C. S. R. Palmer (London); and the Trevithick premium to Mr. A. T. Blackall (Reading).

At the annual general meeting of the Institution of Civil Engineers, held on April 25, the result of the ballot for the election of officers was declared as follows:—President, Dr. W. C. Unwin (London); vice-presidents, Mr. R. Elliott-Cooper (London), Mr. A. G. Lyster (Liverpool), Mr. B. Hall-Blyth (Edinburgh), and Mr. J. Strain (Glasgow); other members of council, Mr. J. A. F. Aspinall (Liverpool), Mr. J. A. Brodie (Liverpool), Mr. W. B. Bryan (London), Colonel R. E. B. Crompton, C.B. (London), Mr. W. Davidson (Australasia), Mr. J. M. Dobson (London), Mr. H. F. Donaldson, C.B. (London), Mr. E. B. Ellington (London), Mr. Maurice Fitzmaurice, C.M.G. (London), Mr. J. P. Griffith (Ireland), Dr. C. A. Harrison (Newcastle-on-Tyne), Mr. W. Hunter (London), Mr. G. R. Jebb (Birmingham), Mr. H. E. Jones (London), Mr. E. H. Keating (Canada), Sir Wm. Thos. Lewis, Bart., K.C.V.O. (Aberdare), Sir Thomas Matthews (London), Mr. W. Henry Maw (London), Hon. C. A. Parsons, C.B. (Wylam-on-Tyne), Mr. F. E. Robertson, C.I.E. (London), Mr. Alexander Ross (London), Mr. J. W. Shores, C.M.G. (South Africa), Hon. F. J. E. Spring, C.I.E. (India), Sir Philip Watts, K.C.B. (London), Mr. W. B. Worthington (Derby), and Mr. A. F. Yarrow (Glasgow). This council will take office on the first Tuesday in November.

AMERICAN scholars are at present busily engaged in exploring the materials for the study of the history of their continent which are stored in the record-rooms of Europe. A useful contribution to this inquiry is the catalogue of the Italian documents, which has been prepared by Prof. C. R. Fish, and recently published by the Carnegie Institution of Washington. Students of the history of countries other than America will be interested in the descriptions of the manuscript collections at the Vatican, the Propaganda Fide, and other repositories at Rome, Naples, Venice, Turin, and Florence, with the conditions under which they are available for examination.

IN one of those comprehensive discussions of special anthropological problems, of which the French reviews hold an almost complete monopoly, M. B. P. Van der Voo in the April issue of *La Revue des Idées* examines the origin in the belief in metempsychosis. Finding its origin to lie in the same group of conceptions which include the



passage of the soul into animals and plants, he discusses in order the Indian evidence, the conception of the moon as the abode of spirits and the deity of life, its influence on the rain, and that of the rain on human life. He next deals with the various forms of reincarnation—in the Carnivora, snakes, birds, and, finally, in human beings. This essay, with its abundant references to the literature of the subject, must be of the greatest value to students.

THE Ethnographic Survey of India, with a view to the preparation of revised editions of the accounts of the tribes and castes of Bengal, the United Provinces, and other parts of the Empire where the information has been tabulated, publishes occasional monographs on special subjects of interest. The most recent of these is an account of the marriage rites of the Prabhus of western India, who, like many castes engaged in literary pursuits, now claim to be of Kshatriya or warrior origin. The monograph, as Mr. Annandale remarks in his prefatory note, would be improved by compression; but it supplies abundant evidence of the predominating belief in the efficacy of magic to counteract the power of malignant spirits and the evil eye, which is the chief basis of the domestic rites of the Hindus. Its value for European readers would be much enhanced by a few photographs illustrating the arrangement of the marriage booth, the sacred fire, and the other appliances of the rites, which would assist students of the ceremony who have not enjoyed the chance of witnessing a high-caste marriage.

WE have received a copy of the second report of the Jerusalem Society for the Prevention of Cruelty to Animals. In view of the ill-treatment to which domesticated animals are subjected in many parts of the East, the movement is well worthy of sympathy and support.

THE second number of the Journal of the East Africa and Uganda Natural History Society contains a large amount of interesting matter relating to the fauna of our East African possessions, Mr. F. J. Jackson contributing a synopsis of the game-birds of the district, while Mr. C. W. Hobley discusses spitting cobras. For a long time naturalists were very shy in accepting the assertions of settlers that an African snake possesses the power of ejecting their venom to considerable distances. The statement has, however, of late years been verified by indisputable evidence, and Mr. Hobley has now been able to identify the species as the black-necked cobra (*Naja nigricollis*). Additional testimony as to the spitting power of these serpents is given by the author himself, who on one occasion in the Athi saw a dog put up a cobra from a bush. "It swayed its head slightly and gradually drew it back, and I expected any second to see it strike the dog, but, instead of that, a stream of colourless liquid shot out of its mouth into the dog's face, and the snake dropped and wriggled into the bush." The flashlight photograph by Mr. Cherry Kearton of a lion going to drink is unsurpassed.

PART V. of the Ceylon Marine Biological Reports is devoted to an account of the scientific work on the local pearl-banks during 1910, and in one section of the report Mr. T. Southwell discusses the present condition and future prospects of the banks. As these cover an area of more than 700 square miles, it will be obvious that the task of ascertaining their general condition—let alone any attempt at controlling the natural factors—is of stupendous difficulty. Furthermore, the Ceylon pearl-oyster has the sexes separate, instead of being, like the continental species, hermaphrodite, while it thrives best in the open sea at a depth of about 6 fathoms in place of in inter-

tidal waters, consequently the system of culture which has been found to succeed in the case of the mainland species proved practically useless when applied to the Ceylon banks. At the present time these banks are almost unproductive; and it seems that there are periodical spells of barrenness, when not a single adult oyster is to be found over the whole area. During such a period the banks may, however, become suddenly replenished and covered in countless numbers with spat over several square miles, and the problem now awaiting solution is the origin of this presumably foreign spat. The second problem is connected with the disappearance of the oysters, both old and young. Although it has been proved that predaceous fish and boring molluscs have a share in the destruction, there still remains a considerable percentage of oysters which die for some reason at present unknown, although disease may be the cause. When these problems are solved, and measures taken to counteract the evil, hopes are entertained for the future of the beds.

IN our issue of January 19, 1911, we gave a full account of the paper read by Dr. Johan Hjort before the Royal Geographical Society, describing the oceanographical expedition of the s.s. *Michael Sars* in the North Atlantic. The April number of *The Geographical Journal* contains the first instalment of the complete paper, which is illustrated by three excellent plates showing some of the deep-sea fishes which were captured by the expedition, as well as by a considerable number of text figures. The vertical distribution of the two fishes, *Cyclothone microdon* and *Cyclothone signata*, is clearly shown by a series of diagrams representing the numbers of fishes of different sizes captured at various depths down to 1500 meters. These results prove the value of the methods adopted by the expedition of making simultaneous hauls, lasting for a considerable time, at many different depths.

DR. JOHAN GEHRKE (Publ. de Circonstance, No. 52, Internat. Comm. Marine Invest.) gives an account of the hydrography of the Baltic, with details of the salinity, temperature, and oxygen content of the waters of different regions of that sea. Dr. Arwidsson (No. 54) records detailed observations on the mass, colour, reproductive organs, scales, and food of 148 examples of salmon (*Salmo salar*) from the river Laga, in south-west Sweden, and concludes that, in all probability, the fish go down this river to the sea for the first time in the spring following the completion of their second year.

PROF. ERMANN GIGLIO-TOS, formerly of the Royal University of Cagliari, has succeeded the late Prof. Giglioli in the chair of zoology, anatomy, and physiology of vertebrates in the Reale Istituto di Studi Superiori of Florence. His introductory address dealt with the subjects of organic evolution, natural selection, and the origin of species. He distinguishes somatic variations of two kinds:—(1) somatogenous, produced by the environment, and not giving rise to modifications in the germ, and therefore of no importance in regard to the origin of species (e.g. in *Artemia*); (2) blastogenous, which do produce germinal modification, and are therefore of great importance. Prof. Giglio-Tos believes that cytological investigations of the gametes may reveal variations of their structure, for instance, alteration of the number of chromosomes, sufficient to be the cause of somatic changes leading to the formation of new species.

THE April number of the *Quarterly Journal of Microscopical Science* (vol. lvi., part iii.) is an unusually attractive one. This is, in part, owing to the beauty of the lithographic plates, nearly all of which, we notice, have been

executed in Germany. Mr. C. Clifford Dobell contributes a long memoir on the much-discussed question of the presence of a nucleus in bacteria. He concludes that "all bacteria which have been adequately investigated are—like all other protista—nucleate cells," but a good deal seems to depend, in making this generalisation, upon how one chooses to define the term nucleus. If, for example, we are prepared to admit that "a discrete system of granules (chromidia)" may legitimately be called a nucleus, well and good, but probably many biologists will hesitate before accepting this view. Mr. Dobell also contributes a memoir on those remarkable unicellular organisms, the spirochaetes, with special reference to *Cristispira veneris*, a form occurring in the crystalline style of a lamellibranchiate mollusc (*Venus casta*). Mr. Cresswell Shearer's paper on the trochophore larva of *Eupomatus* will be welcomed by embryologists as a valuable contribution to our knowledge of Annelid development. The illustrations accompanying this paper are particularly worthy of admiration.

A SEQUEL to the information regarding precipitation and absorption of iron, submitted by Prof. H. Molisch in his book on iron bacteria, is furnished by a note in the *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften*, Vienna (October, 1910), in which he states that various aquatic plants induce precipitation of iron from iron salts, and that *Elodea* readily absorbs and accumulates oxide of iron in its leaves, in the outer walls of the epidermal cells.

THE elementary species obtained by Prof. de Vries as a break from *Ænothera Lamarckiana*, and designated by him as *Ænothera nanella*, forms the subject of a communication by Mr. H. H. Zeijlstra in the *Biologisches Centralblatt* (March 1). It is indicated that the type of the original diagnosis is an abnormal plant deformed by the internal growth of bacterium colonies, presumably a species of *Micrococcus*, and that similar characters and form are transmitted to the descendants of abnormal plants. In addition to this, the common form, there is said to be an uncommon but normal form of the species, distinguished from the abnormal chiefly by certain stem and leaf characters, and resembling *Æ. Lamarckiana* except for its dwarf habit; up to the present, seeds of the normal form have not been obtained.

It is apparent from the experiments on transpiration and sap flow, recorded by Mr. J. B. Overton in *The Botanical Gazette* (January and February), that the umbrella plant, *Cyperus alternifolius*, is a convenient plant for ordinary transpiration experiments. It was particularly suitable for the requirements of the author, whose chief object was to study the effects of killing portions of the stem by immersion in steam or poisonous solutions, as the apical tuft of leaves can be readily slipped through a glass cylinder, which is then fixed at the desired position on the stem. So long as the portion of the stem killed is short, the plant withers less rapidly than a cut piece, but immersion in steam proved to be an unsatisfactory method for killing, as the contents of the cells are disorganised. It was also found that the application of certain poisonous solutions, particularly of corrosive sublimate, causes increased transpiration.

AN extensive and important investigation into the nature of crown-gall of plants has been published by the United States Department of Agriculture as Bulletin No. 213 of the Bureau of Plant Industry, in which is provided a detailed account of experiments extending over six years. A bacterial origin was suspected by Dr. E. F. Smith, one

of the authors of the bulletin, in 1904, but definite proof was not obtained until two years later, when a bacterium was isolated, and infection resulting in gall-production was transmitted from pure cultures; to this organism, a short, rod-like form, was given the name *Bacterium tumefaciens*. The inquiry started with galls upon hot-house plants of *Chrysanthemum frutescens*, but subsequently similar malformations were examined on apple, peach, grape, sugar-beet, and other plants; there are probably different physiological races of the bacterium, but cross-inoculation was generally possible. Dr. Smith suggests that the manner of growth resembles certain malignant animal tumours.

Two short papers on seismograms of the great Turkestan earthquake of January 4 are contained in the *Journal of the Meteorological Society of Japan* for last February. Prof. Omori estimates that the epicentre was situated at about 5230 km. in the direction of N. 65° W. from Tokio, or in the Kashgar province of Turkestan, and that the earthquake occurred at 11h. 16m. 42s. p.m. on January 3 (Greenwich mean time). Two maxima of the principal portion of the movement were recorded, the second 2h. 8m. 27s. after the first, and due to surface-waves travelling over the longer portion of the great circle through Tokio and the epicentre giving the usual mean velocity of 3.1 km. per second for the surface-waves. The total duration of the disturbance was more than four hours at Tokio and 2h. 20m. at Osaka.

IN a recent number of the valuable publication *Aus dem Archiv der Deutschen Seewarte* (No. 4, 1910), Dr. O. Steffens gives an account of new meteorological apparatus constructed or improved by himself. It includes an arrangement, beautifully illustrated, for exhibiting the indications of the aneroid-barometer, thermometer, and hygrometer, either separately or on one cylinder, with rectilinear instead of the more usual curved ordinates. Various anemometers registering direction and velocity separately or on the same cylinder, with damping arrangements for eliminating the small oscillations of the wind-vane, are also described and clearly illustrated.

SOME of the results of the international balloon ascents specially arranged for the week July 27 to August 1, 1908, are summarised by Mr. W. H. Dines in *Symons's Meteorological Magazine* for April. He states that the figures show several points of interest, and would repay a careful analysis; we can only quote here a few facts relating to the particular ascent for each day in which the greatest height of trustworthy record in miles was attained, with the temperature (F.) at the greatest height, the height in miles of the commencement of the isothermal column, the temperature at the bottom of the column, and direction of falling point of the balloon.

			m.		m.	
July 27	Pavia	... ..	14'3	-58	7'5	-78 S. by W.
July 28	Crinan (N.B.)	... ..	10'7	-58	6'4	-76 E.S.E.
July 29	Pyrton Hill (Oxon)		14'3	-62	8'5	-92 S.
July 30	Zurich	... ..	11'2	-72	8'1	-69 W.S.W.
July 31	"	... ..	11'3	-65	8'3	-89 S.S.W.
Aug. 1	Strassburg	... ..	11'0	-53	7'5	-80 S. by W.

No large changes of pressure occurred during the week. On July 27 it was high over the Azores and Lapland; by July 29 it had disappeared over Lapland, but increased over the Azores and moved to the south of Ireland. On July 30 and 31 it had again decreased, but still lay over England, with low pressure on July 31 in the Gulf of Bothnia. On August 1 there was little change.

THE April number of the *Journal of the Franklin Institute* contains a well-illustrated article on the properties of the new metallic filaments used in incandescent lamps, by

Mr. G. S. Merrill, of the National Electric Lamp Association, Cleveland, Ohio. The properties dealt with are the resistance, melting point, emissivity, and mechanical strength, and the tungsten filament receives most attention. The strength is determined by loading a short length of filament placed on two knife edges half a centimetre apart, at a point half-way between the supports, and measuring the depression under increasing load till the filament breaks. The change in the structure of the filament from a mixture of finely-divided tungsten and binding material, to pure crystalline tungsten as the temperature is raised during manufacture, is well shown by a series of micro-photographs. The effect of use in increasing the size of the crystals and in roughening the surface of the filament is shown in the same way. These changes are accompanied by a decrease in strength of the filament, which occurs mainly in the first 100 hours of use. The conclusion drawn from the observations is that a compact fine-grained structure is most desirable in lamp filaments.

AN extension for a further term of seven years of the major part of Sir Oliver Lodge's patent No. 11,575 of 1897 for "Improvements in Syntonised Telegraphy without Line Wires" has recently been granted as a result of a case argued before Mr. Justice Parker, the extension being allowed mainly on the grounds that the patentee had not been adequately remunerated for his invention. The patent covers the radiating and receiving apparatus of a complete system of wireless telegraphy and the methods of tuning the sending and receiving circuits to the same frequency, and describes how messages may be sent to each of a number of suitably tuned receiving stations by change of the frequency of the oscillations that are generated. The aërials described are of different forms, but all consist of a pair of "capacity areas" connected by inductances the magnitudes of which control the period of oscillation. The eleven claims of the specification are concerned with the insertion of these inductances into the radiating and receiving circuits; with the adaptation of a single aërial for sending and receiving the insertion in turn of inductances of various magnitudes in order to attain the selectivity already referred to; with the details of a coherer consisting of a fine metal point resting on a flat metallic spring; and, lastly, with methods of setting up the oscillations by discharges into the oscillator across air-gaps and receiving through an oscillation transformer, in order to separate both the oscillator and the resonator from metallic connection with other circuits, thus enabling them to vibrate in their own free periods so as to get precise tuning. The whole specification has been extended for the further term except the portions covering the use of the same circuits for sending and receiving, the use of various frequencies to select various receiving stations, and the use of the particular form of coherer. It thus appears that the patentee holds a master-patent covering the tuning of electrical circuits by means of inductances, and as the use of such tuned circuits is common to methods of signalling used by wireless telegraph companies operating in England, the situation will probably give rise to interesting developments.

THE report of the council of the Hampstead Scientific Society for the year 1910 shows that the object for which the society was founded in 1899, namely, the encouragement of a popular interest in science, has been pursued diligently and successfully. During the year eighty new members were elected, the membership rising to 334, the largest in the history of the society. Twenty-nine meetings, general and sectional, were held in 1910, in addition to five vacation meetings, a summer excursion organised

by the photographic section, and four Christmas lectures to juveniles. The feature of the society's work for the year was the development of the astronomical section since the establishment of the observatory near the Whitestone Pond. The meteorological station at the same place has been efficiently conducted. An observer attended at 9 a.m. and 9 p.m. every day during the year, without intermission, and the results, after reduction, have been published monthly by the Meteorological Office.

THE Carnegie Institution of Washington has issued a list of the various works which it has published, together with those it has in the press. Copies of each publication, except the *Index Medicus*, are sent gratuitously to a limited number of the great libraries of the world, and the remainder of the edition is on sale at cost price. As the catalogue shows, this arrangement enables workers in science to obtain accounts of many important researches at a minimum cost. Descriptive lists of the books available will be sent to any interested person on application to the Carnegie Institution of Washington, Washington, D.C.

A SUPPLEMENT—covering works added to the library during the years 1908-9—to the Catalogue of Lewis's Medical and Scientific Circulating Library has been issued from the library at 136 Gower Street, London. The catalogue, the price of which is sixpence, contains a classified index of subjects with the names of the authors who have treated upon them, in addition to the ordinary alphabetical list of titles.

#### OUR ASTRONOMICAL COLUMN.

NEW MINOR PLANETS.—A Central News telegram of Tuesday states that the Transvaal Observatory reports the discovery of two minor planets. The discovery was made during an attempt to photograph the eighth satellite of Jupiter. The following are the positions of the new planetoids:—No. 1, R.A. 14h. 41m., Dec. 12° 34' S.; No. 2, R.A. 14h. 48m., Dec. 15° 18' S. It is stated that these are the first minor planets found by an observatory south of the equator.

NOVA LACERTÆ.—Photometric measures of Nova Lacertæ, made between January 4 and March 15 by Mr. H. Shapley at the Lays Observatory, are recorded in No. 4493 of the *Astronomische Nachrichten*. During that period there was a general decline of brightness from mag. 7.67 to mag. 9.23. Four neighbouring B.D. stars were used for comparison, and it is suggested that one of them, B.D. +51° 3420 (mag. 8.7), is a variable with a range of at least 0.4 magnitude; if this is so, several anomalies in the photometric results may be explained.

In the same journal Dr. Slocum records observations of two coloured B.D. stars near the nova, to which M. Luizet previously directed attention and suggested that B.D. +51° 3414 diminished in brightness by 1.5 magnitudes between January 2 and February 21. The photographic observations at Yerkes, with coloured screens, indicate that both stars are abnormally coloured, B.D. +51° 3416 showing a greater preponderance of red rays and B.D. +51° 3414 a greater preponderance of rays of shorter wave-length than a normal star of the A type.

HALLEY'S AND FAYE'S COMETS.—An observation by Prof. Barnard, using the 40-inch refractor, showed that on March 19 Halley's comet was of magnitude 13.5, and very easy to observe. It was round, and the middle showed a slight brightening, with possibly a faint, but uncertain, nucleus; its measured diameter, probably too large, was 45" (*Astronomische Nachrichten*, No. 4492).

Dr. Ebell continues his ephemeris, giving places and magnitudes for Faye's comet (1910e) up to May 14. At present the comet is about 20 m. and slightly north of